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ABSTRACTS

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1. *Boswellia papyrifera* pre-dominated woodlands of Ethiopia: Present roles and threats

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ABSTRACT : The *Boswellia* pre-dominated woodland, belonging to the Combretum–Terminalia deciduous woodlands of the dry forests of Ethiopia, forms the largest vegetation cover and is widespread in the northern and north-western lowland part of the country. This paper has tried to review and discuss the current contribution of the *Boswellia* dominated woodlands and its main threats which contributed for its degradation based on different empirical studies. From the review it is understood that the *Boswellia* dominated woodland represents important natural resources on which development could be based since it offer diverse products of commerce such as incense, wood and honey, and support to other economic activities such as fodder for livestock and soil conservation for crop farming. However, the annually cash income generated by households from the *Boswellia* woodland is only 1089.55 ETB, which is 18.32 fold less than that of the income from the agriculture. The low cash flow is shown to be due to policy restrictions on the engagement of the local people in producing and marketing frankincense, a principal product from the woodland. Such low cash contribution by the woodland motivated the local people to continuously clear and convert the woodland in to agricultural land. In lined with this, the structure of some of the important species in the woodland showed a hump shaped curve distribution, suggesting regeneration is severely lacking and the population is under serious threat in the long term. Therefore, the main conclusion of this study is that the *Boswellia* woodland, although worthy of sustainable management and utilization even on the basis of economic criteria, is continuing to suffer conversion to other land uses which offer benefits in the short term and in which farmers have more confidence in terms of economic benefits and ownership rights of the land. Therefore, to maximize the actual value of the *Boswellia* pre-dominated woodland, policies and institutions that govern access to and use of forest resources and their management need to be revised in such a way that the locals will have the legal right and the confidence to own or co-own the forest resources in their vicinity, and will continue to manage and utilize it.

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2. Precision farming : Components and applications–A review

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ABSTRACT: Agriculture is the backbone of our country and economy, which accounts for almost 30 per cent of GDP and employs 70 per cent of the population. Over the last decade, technical methods have been developed to utilize modern electronics to respond to field variability. Such methods are known as spatially variable crop production, geographic positioning system (GPS)-based agriculture, site-specific and precision farming (precision agriculture). The term 'spatially variable crop production' seems to be more accurate and descriptive than the term precision agriculture. The concept of Precision Agriculture avails the recent developments in sensors, green-house and protected agriculture structures. This technology can be meaningfully deployed for hot and extremely dry regions where water is scarce, soil is salty, temperature is high and rainfall is low. It is also certain that even in developing countries, availability of labour for agricultural activities is going to be in short supply in future. The time has now arrived to exploit all the modern tools available by bringing information technology and agricultural science together for improved economic and environmentally sustainable crop production. Precision Agriculture is an integrated crop management system that attempts to match the kind and amount of inputs with the actual crop needs for small areas within a farm field.

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3. Effect of auto exhaust emission on the growth, morphology and biochemical characteristics of marigold grown in different sites of Lucknow

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ABSTRACT: The present study was planned to evaluate the effect of auto-exhausts on a very common ornamental plant i.e. African marigold (*Tagetes erecta*) plants which also possess aromatic & medicinal properties and natural source of antioxidants. The plant is also recommended for growing with rose for its

allelopathic nature. The area under marigold cultivation is increasing every year due to its increasing demand throughout the world. To assess the effect of auto-exhaust on marigold plants transfer experiment study was conducted. Three sites (Road stretches) within the municipal premises of Lucknow city were identified based on survey of sites and the available data on air pollution loads, which differ with each other very significantly in terms of the number of vehicles (source of pollution) plying there. A comparison of contents of photosynthetic pigments, protein, proline and cysteine among *Tagetes erecta* plants kept at three different sites very explicitly indicates the bearing of auto exhaust effect on them. Marked alteration in bio-chemical characteristics of plant was observed in plants grown at highly polluted site as compared to plant grown at less polluted site.

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4. National agriculture insurance scheme adoption among farmers : A factorial analysis in J&K state

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ABSTRACT: Agriculture crop insurance has an important role in agricultural production and is a tool to support farmers against threats. Investigation of factors affecting farmers' adoption of national agriculture insurance scheme strategy was the objective of this study. The research was conducted in Jammu and Kashmir State, India. Survey was the research method, and data was collected by questionnaire and schedule interview. Data were analyzed by Excel and SPSS 18 Version software. Findings revealed that the farmers with higher rate of Agriculture crops insurance adoption, were younger with higher level of literacy, they had more crop area and more income, they had more awareness towards the goals and advantages of crop insurance, they often consult with other farmers and they have more participation in training classes and sessions. Also, rate of their contact with agricultural agents and insurance agents was higher, they more participated in extension lectures and more visited crop insurance company's activities. The results revealed that four independent variables explain adoption of agriculture crop insurance. Consult with other farmers is the main independent variable. The variables affecting crop insurance (31 variables) were classified to nine factors according to factor analysis technique. Extension- education factor, economic factor, communication channels factor, opinion leadership factor, facility factor, confidential factor, supervision factor, and diversity factor are the factors. Based on the research findings, some recommendations are presented at the end of the paper.

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5. Irrigation management of potato based on soil profile water extraction

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ABSTRACT: Efficient management of depleting water resources is important in order to enhance crop productivity and to attain high water use efficiency. The study aimed at identifying irrigation management practices, which could result in water savings through deliberate under irrigation. Field experiments were conducted at Hill Campus, Ranichauri, Tehri-Garhwal, Uttarakhand, India on potato crop (Kufri Chandramukhi) over a period of two years during the winter seasons of 2008-09 and 2009-10. The crop was planted in first week of November and harvested in the last week of March spanning approximately 150 days. Three irrigation treatments were maintained based on the maximum allowable depletion (MAD) of available soil water. The treatments were 20% (T_1), 40% (T_2) and 60% (T_3) maximum allowable depletion of available soil water. No soil water stress was maintained at the initial stages of the crop development so as to allow the plants attain a healthy growth. Soil moisture content was measured by gravimetric method periodically in 0-15, 15-30 and 30-45 cm soil profiles. Soil moisture showed a cyclic temporal variation at all three selected soil depths. The magnitude of this variation was higher in 0-15 cm soil profile and decreased in 15-30 and 30-45 cm soil profiles in that order. This trend was observed at all schedules of irrigation. Field experiments revealed that irrigation schedule with 40% maximum allowable depletion of available soil water gave the maximum water use efficiency for potato crop. For scheduling of irrigation of potato crop, 0-30 cm soil profile should be considered as most of the required water to be extracted from this layer by the plant.

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6. Effective inoculation method and optimum concentration of *Oryctes* virus for biological control of coconut beetle (*Oryctes rhinoceros*) adults

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ABSTRACT: The study was carried out to determine the effective inoculation method and optimum concentration of local *Oryctes* virus (OrV) for successful infection of *Oryctes rhinoceros* (L.) adults in laboratory which released to the field to spread the viral disease among healthy larvae and beetles for their biological control. 0.1ml of 10⁴ ppm of viral suspension was introduced orally to one set of beetles and another set of beetles were allowed to swimming in the suspension for 10 minutes. Beetles were dissected at different intervals to determine the period taken for infection. Five concentrations (10¹ ppm to 10⁵ ppm) of virus suspensions were introduced to adult beetles orally to find the lethal concentration (LC₅₀) and lethal time (LT₅₀). Percentage of infected beetles was significantly different (P<0.001) among the two methods of inoculation and untreated control. After 21 days of inoculation, oral introduction method, swim method and control recorded 88.8%, 44.4% and 11.1% of OrV infection, respectively indicating the most effective inoculation method as oral introduction. Cumulative per cent mortality of *O. rhinoceros* adults with 10¹ ppm, 10² ppm, 10³ ppm, 10⁴ ppm and 10⁵ ppm concentrations were recorded as 7.3%, 25.1%, 33.3%, 81.4% and 100%, respectively. LC₅₀ was 10^{2.7} ppm and LT₅₀ for 10⁴ ppm and 10⁵ ppm concentrations were 23 days and 12 days, respectively. Best concentration to oral inoculation of *O. rhinoceros* with OrV for field release was selected as 10⁴ ppm.

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7. Evaluation of coloured seedless table grape varieties for increase in shelf life

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ABSTRACT: An experiment to study the shelf life of four table grape varieties was conducted at National Research Centre for Grapes, Pune (M.S.). Grape bunches packing and the cold storage condition for 30 days after pre cooling for 24 hours was according to the export standard. After cold storage, shelf life and other quality parameters were recorded for four days. Lowest physiological loss of weight was recorded in Sharad Seedless followed by Mahadev Seedless. These two varieties also performed better for the quality parameters in terms of bunch weight, 5 berry weight and berry diameter which are favourable for better shelf life. Significant differences were found for the quality parameters except total soluble solids (TSS). Overall, Sharad Seedless and Mahadev Seedless recorded with the lowest per cent of berry fallen and rotting among the four varieties studied.

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8. Effect of bio-inoculants on leaf nutrient status of apple cv. Red Delicious

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ABSTRACT: Significant differences were recorded for total leaf nitrogen, phosphorous and potassium in response to the different fertilizers treatments. The effect of fertilizer regimes on leaf nitrogen resulted in significant difference in which treatment F₁ recorded maximum leaf nitrogen (2.04 %) followed by F₃ (1.99 %) and F₄ (1.95 %). The interaction effect of phosphate solubilizing inoculants and nitrogen fixing inoculants on leaf nitrogen recorded significant increase. However, there was non-significant differences in leaf phosphate and potassium in response to these two inoculants. Significant results were recorded in response to interaction effect of nitrogen fixing inoculants and fertilizer regimes. Effect of nitrogen fixing inoculants, phosphate solubilizing inoculants and fertilizer regimes recorded a significant increase in leaf nitrogen.

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9. Effect of pre-harvest application of GA₃, triacontanol and calcium salts on yield and physical characters of Kinnow fruits harvested on different dates

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ABSTRACT: The study on the effect of pre-harvest chemical treatments in Kinnow mandarin was conducted at Khalsa College, Amritsar for two years. Pre-harvest foliar application of GA₃ (10, 20, 30ppm), triacontanol (400, 600ppm), CaCl₂ (4, 6%) and Ca(NO₃)₂ (0.1, 0.2, 0.3%) was given to the Kinnow plants of fifteen years of age. The harvesting of the fruits was done on January 1st, January 15th, February 1st and February 15th during both the years and yield of the fruits was calculated along with their physical analysis. It was observed that the maximum fruit yield to the tune of 54.88kg/plant was recorded with the application of GA₃ at 30ppm and it was proved to be the most efficacious treatment for improving fruit quality in respect of fruit size, weight and juice content. Maximum peel thickness was observed with CaCl₂ at 6 per cent.

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10. Effect of plant growth regulators on growth and spike yield of gladiolus cultivars

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ABSTRACT: The field experiment was conducted during Rabi season 2010-2011 with combination of different sources of plant growth regulators to study their effect on vegetative growth and spike yield of gladiolus. Experiment consisted of 16 treatments each replicated thrice and laid out in RBD. The results obtained showed that the plant growth regulators significantly affected the growth parameters of gladiolus such as maximum values of plant height (80.78cm and 82.22cm in Novalux and White Prosperity, respectively), number of shoots in Novalux and White Prosperity (3.44 in each), number of leaves /plant (20.78 and 20.44 in Novalux and White Prosperity, respectively), minimum days to spike initiation in Novalux (76.67days) and in White Prosperity (78 days), minimum days to opening of the first floret (81.67 days in Novalux and 88.67 days in White Prosperity), first florets durability (7.56 days in Novalux and 7.11 days in White Prosperity), spike length (81.55cm in Novalux and 82.00cm in White Prosperity), number of florets/spike (23.67 in Novalux and 18.33 in White Prosperity), number of spikes/plant (3.67 in Novalux and 3.11 in White Prosperity) and spike yield /ha (295200 in Novalux and 279900 in White Prosperity). The maximum value of yield and yield attributing parameters were found to be higher under the treatment NAA @ 200ppm (T₉).

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11. Correlation and path coefficient analysis in brinjal (*Solanum melongena* L.)

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ABSTRACT: Genetic variability in terms of correlation and path coefficient were studied for yield per plant and its attributing traits in 16 genotypes of eggplant. Significant positive genotypic correlation coefficient was observed by fruit weight, number of leaves per plant, number of fruits per plant and number of flowers per plant. An overall observation of path coefficient studies revealed that the direct contribution of fruit yield per plant, fruit yield per hectare, fruit weight, number of fruits per plant, and number of flowers per plant was of higher magnitude on fruit yield. High negative direct effect was recorded in total sugar followed by reducing sugar and fruit length. Direct selection may be executed considering these traits as the main selection criteria to reduce indirect effects of the other characters during the development of high-yielding eggplant varieties/hybrids.

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12. Evaluation of vegetable amaranth under hot summer growing condition

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ABSTRACT: The performance of 13 vegetable amaranth genotypes was assessed under hot and dry summer condition in red and lateritic belt of West Bengal, India. Significant differences among the genotypes were noticed for various growth and yield attributing traits at three sampling dates (17, 24 and 31 days after sowing). North Dinajpur Collection-4 was recorded as the highest yielder (178.4 q/ha). Bankura Collection-2, Pusa Lal Choulai, Kendrapara Collection-6 and Arka Suguna were relatively low producer, but had high leaf : stem ratio, a desirable trait for any leafy vegetable.

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13. Response of different post harvest treatments on physiological loss in weight and changes in colour of tomato (*Lycopersicon esculentum* Mill.)

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ABSTRACT: An experiment was conducted in the laboratory of the Department of CIHAB, Palli Sikshya Bhavana (Institute of Agriculture), Visva-Bharati, Sriniketan (WB) on storage life of tomato fruits with different post harvest treatments. The experiment was laid out in RBD with nine treatments each comprising of three replications and ten fruits per replication. The results revealed that ripening was initially delayed by MAP, NAA and NAA+MAP treatments. Among all the chemicals the performance of GA₃, was better than NAA in reducing physiological loss in weight of tomato. The results on the colour development of the fruit in storage indicated that the percentage colour development varied significantly in all the treatments of tomato fruits up to 6th day of storage.

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14. Effect of storage environment on shelf life of aonla cv. na-7

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ABSTRACT: For combating the glut at peak harvest it is imperative to improve the storage life of aonla fruit. The object of the present study was to evaluate the effect of packaging and storage environment at ambient temperature as well as under refrigeration for conservation of aonla fruits cv.NA-7. The treatment comprised thermocol bowls, perforated polythene bags, cardboard, wooden boxes, perforated plastic crates, earthen pots, gunny bags, refrigerator and control. Storage under refrigerator was found most effective in retaining relatively superior skin colour, minimizing PLW and pathological losses and conserving Vitamin 'C' and acidity contents in aonla fruits. Reduction was noticed in the metabolical status i.e. TSS and sugars when compared with the storage under rest of the packaging and environmental conditions obviously due to moisture loss at ambient temperature. The higher spoilage occurred mainly due to black mould.

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15. Effect of variety, type of cutting and IBA concentration on rooting of croton (*Codiaeum variegatum*) cuttings

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ABSTRACT: The present experiment was conducted to find out the interaction effect of variety, type of

cutting and IBA concentration on rooting in cuttings of croton. Overall performance of hardwood cutting of broad leaf variety treated with 400ppm IBA was found significantly superior in inducing the highest rooting percentage (82.34%), took lesser time for sprouting (10 days), survival percentage (80.04%) and sprouting percentage (88.66) than other treatments. The hot and humid condition were conducive for growing semi-hardwood and hardwood cuttings of broad leaf as well as narrow leaf variety of croton which were able to show good performance. Out of three type of cuttings, semi-hardwood cuttings and 200ppm IBA was found better in comparison to 400ppm IBA with broad leaf for rooting and establishment. Therefore, it is concluded that croton can be multiplied by cuttings under greenhouse condition with IBA treatments.

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16. Response of China aster varieties to pinching for growth, yield and quality

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ABSTRACT: A field experiment to find out response of China aster varieties to pinching for growth, yield and quality was conducted at farm of Horticulture Section, College of Agriculture, Nagpur. The experiment consisted of sixteen treatments of four China aster varieties with four pinching treatments and it was laid out in Factorial Randomized Block Design with three replications. Maximum plant height was found in Phule Ganesh Purple variety. Plant height was significantly reduced with double pinching compared to control treatment of pinching i.e. without pinching. Whereas, spread of plant was found maximum in Phule Ganesh Pink as well as under the treatment of single pinching at 30 days after transplanting. Maximum flowering span was found in Phule Ganesh White as well as the treatment of double pinching at 30 and 45 days after transplanting. Yield characters were found to be maximum in Phule Ganesh White variety with single pinching treatment at 30 days after transplanting.

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17. Studies on processing and storage stability of aonla (*Emblica officinalis* Gaertn) RTS

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ABSTRACT : Aonla plays an important role in human nutrition. The fruits are not consumed freely in fresh form because of its astringent taste. But the excellent nutritive and therapeutic values of fruits have great potentiality for processing in to various quality products. In present study different recipes of Aonla ready to serve (RTS) was standardized to explore the processing potential of Aonla. There were five different possibilities of recipes. The RTS prepared from the recipes 10% pulp, 12% TSS and 0.30% acidity gave highest organoleptic quality score followed by RTS prepared from 10% pulp, 10% TSS and 0.30% acidity and the quality of the prepared RTS was maintained up to fourth month at ambient temperature.

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18. *Chenopodium* Craft : Creativity to handle the problem of plenty

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ABSTRACT : Tall type primitive *Chenopodium* species are producing huge amounts of biomass under high input agriculture. If not managed properly, this biomass is becoming a problem of plenty. To handle this problem, the stems of these species were articulated in to a number of artefacts like bangle stands, ecofriendly pens, pen stands, pot stands, flag stands, *agarbatti* stands, various types of hangers and letter stands etc. Such diversified uses will make these chenopods more acceptable to society and remunerative to farmers.

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19. An unusual occurrence of vivipary in papaya (*Carica papaya* L.)

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ABSTRACT: Vivipary is of unusual occurrence in papaya. In viviparic fruits, seeds germinate inside while still they remain attached with fruits. Such fruits are insipid in taste. If cut exposed, the germinated seeds inside the fruit look very clearly. High humidity and warm weathers appear associated with the viviparic fruits in papaya.

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